

## What is claimed is:

1. An optical disc comprising:  
 a substrate having flat portions and micro-embossments, which are track guides,  
 protruding from surfaces of the flat portions;  
 a reflective layer formed on the surfaces of the flat portions and the micro-embossments  
 of the substrate;  
 a dielectric layer formed on the reflective layer;  
 a recording layer formed on the dielectric layer; and  
 a protective layer formed on the recording layer.
2. The optical disc of claim 1, wherein said micro-embossments are hills of a peaked  
 hood shape, respectively.
3. The optical disc of claim 2, wherein said hills of a respectively peaked hood shape  
 each have a height of  $\lambda/4$  from the surfaces of the flat portions, in which  $\lambda$  is a wavelength of  
 light compatible with the optical disc.
4. The optical disc of claim 1, wherein a surface of said protective layer opposite that  
 formed on the recording layer is flat.
5. The optical disc of claim 4, wherein a thickness of said protective layer is thicker  
 than those of said micro-embossments.
6. The optical disc of claim 5, wherein said protective layer is transparent.

1 ~~7.~~ The optical disc of claim 1, wherein said substrate has a first side having the flat  
2 portions and the micro-embossments, said substrate further comprising a second side opposite  
3 and substantially parallel to the first side and having second flat portions and second micro-  
4 embossments, which are track guides, protruding from surfaces of the second flat portions, the  
5 optical disc further comprising:

6 a second reflective layer formed on the surfaces of the second flat portions and the  
7 second micro-embossments of the second side of the substrate;

8 a second dielectric layer formed on the second reflective layer;

9 a second recording layer formed on the second dielectric layer; and

10 a second protective layer formed on the second recording layer.

11 ~~8.~~ The optical disc of claim 7, wherein said micro-embossments and the second  
12 micro-embossments are hills of the peaked hood shape, respectively.

13 ~~9.~~ The optical disc of claim 8, wherein the hills of a respectively peaked hood  
14 shape have a height of  $\lambda/4$  from corresponding ones of the surfaces of the flat portions and the  
15 second flat portions, in which  $\lambda$  is a wavelength of light compatible with the optical disc.

16 ~~10.~~ The optical disc of claim 7, wherein outer surfaces of the protective layer and  
17 the second protective layer extend further from the substrate than peaks of the hills.

18 ~~11.~~ The optical disc of claim 3, wherein a thickness of said protective layer is  
19 thicker than those of said micro-embossments.

1 12. An optical disc comprising:  
2 a substrate having a first surface with first protrusions extending from the first surface,  
3 wherein the first protrusions are track guides for data.

1 13. The optical disc of claim 12, wherein the first surface has first flat portions  
2 between the first protrusions.

1 14. The optical disc of claim 13, wherein the first protrusions are hills of a  
2 respectively peaked hood shape.

1 15. The optical disc of claim 14, wherein each hill has a height of  $\lambda/4$  extending  
2 from the first flat portions, wherein  $\lambda$  is a wavelength of light to record and/or reproduce the  
3 data from the optical disc.

1 16. The optical disc of claim 12, further comprising:  
2 a first reflective layer formed on the first surface and the first protrusions;  
3 a first dielectric layer formed on the first reflective layer;  
4 a first recording layer formed on the first dielectric layer; and  
5 a first protective layer formed on the first recording layer.

1 17. The optical disc of claim 16, wherein the first protective layer is formed further  
2 from the first surface than peaks of the first protrusions.

1 18. The optical disc of claim 17, wherein the first protective layer has a flat outer  
2 surface.

1           19.    The optical disc of claim 17, wherein the recording layer has grooves  
2 corresponding to and above the protrusions, wherein the grooves have a depth substantially as  
3 a height of the protrusions.

1           20.    The optical disc of claim 15, further comprising:  
2 a reflective layer formed on the first surface and the protrusions;  
3 a dielectric layer formed on the reflective layer;  
4 a recording layer formed on the dielectric layer; and  
5 a protective layer formed on the recording layer.

1           21.    The optical disc of claim 19, wherein the protective layer is formed further from  
2 the first surface than the peaks of the protrusions.

1           22.    The optical disc of claim 12, further comprising:  
2 the substrate having a second surface opposite to and substantially parallel to the first  
3 surface with second protrusions extending from the second surface.

1           23.    The optical disc of claim 15, further comprising:  
2 the substrate having a second surface opposite to and substantially parallel to the first  
3 surface with second protrusions extending from the second surface, the second surface having  
4 second flat portions between the second protrusions;  
5 wherein the second protrusions are hills of a respectively peaked hood shape, each hill  
6 having a height of  $\lambda/4$  extending from the second flat portions.

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24. The optical disc of claim 16, further comprising:  
the substrate having a second surface opposite to and substantially parallel to the first  
3 surface with second protrusions extending from the second surface;  
4 a second reflective layer formed on the second surface and the second protrusions;  
5 a second dielectric layer formed on the second reflective layer;  
6 second recording layer formed on the second dielectric layer; and  
7 a second protective layer formed on the second recording layer.

1 25. The optical disc of claim 24, wherein the first protective layer is formed further  
2 from the first surface than peaks of the first protrusions.

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1 26. The optical disc of claim 24, wherein the first protective layer has a flat outer  
2 surface.

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1 27. An optical disc which stores data, comprising:  
2 a substrate having a first surface; and  
3 first protrusions extending from the first surface, wherein the first protrusions are track  
4 guides for the data.

1 28. The optical disc of claim 27, wherein the first protrusions are integrally formed  
2 of the substrate.

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1 29. The optical disc of claim 27, wherein the substrate has a second surface opposite  
2 and substantially parallel to the first surface, the optical disc further comprising second  
3 protrusions extending from the second surface, wherein the second protrusions are track guides  
4 for the data.

1           30.    The optical disc of claim 28, wherein the substrate has a second surface opposite  
2 and substantially parallel to the first surface, the optical disc further comprising second  
3 protrusions extending from the second surface, wherein the second protrusions are track guides  
4 for the data and are integrally formed of the substrate.

1           31.    A method of forming an optical disc which stores data, comprising:  
2 stamping a substrate to have first protrusions extending from a first surface of the  
3 substrate, wherein the first protrusions are track guides for the data.

1           32.    The method of claim 31, further comprising:  
2 forming a first reflective layer on the first surface and the first protrusions;  
3 forming a first dielectric layer on the first reflective layer;  
4 forming a first recording layer on the first dielectric layer; and  
5 forming a first protective layer on the first recording layer.

1           33.    The method of claim 32, wherein the first protective layer is further from the  
2 first surface than peaks of the first protrusions.

1           34.    The method of claim 31, further comprising:  
2 stamping the substrate to have second protrusions extending from a second surface of  
3 the substrate, wherein the second protrusions are track guides for the data.

1           35.    The method of claim 32, further comprising:  
2 stamping the substrate to have second protrusions extending from a second surface of  
3 the substrate, wherein the second protrusions are track guides for the data;

4 forming a second reflective layer on the second surface and the second protrusions;  
 5 forming a second dielectric layer on the second reflective layer;  
 6 forming a second recording layer on the second dielectric layer; and  
 7 forming a second protective layer on the second recording layer.

1 36. The method of claim 35, wherein the second protective layer is further from the  
 2 second surface than peaks of the second protrusions.

1 37. A method of recording data on an optical disc including a substrate having a  
 2 surface with protrusions extending from the surface, wherein the protrusions are track guides  
 3 for the data, a reflective layer formed on the surface and the protrusions, a dielectric layer  
 4 formed on the reflective layer, a recording layer formed on the dielectric layer, and a protective  
 5 layer formed on the recording layer, the method comprising:

6 moving an objective lens of a flying head to a distance of  $\lambda/10$  to  $\lambda/5$  from the  
 7 protective layer; and

8 forming an optical spot at a bottom of the objective lens to generate a near field, thereby  
 recording the data on the recording layer based upon the protrusions.

1 38. A method of reproducing data from an optical disc including a substrate having  
 2 a surface with protrusions extending from the surface, wherein the protrusions are track guides  
 3 for the data, a reflective layer formed on the surface and the protrusions, a dielectric layer  
 4 formed on the reflective layer, a recording layer formed on the dielectric layer and storing the  
 5 data, and a protective layer formed on the recording layer, the method comprising:

6 moving an objective lens of a flying head to a distance of  $\lambda/10$  to  $\lambda/5$  from the  
 7 protective layer; and

8 forming an optical spot at a bottom of the objective lens to generate a near field; and

9 reflecting the optical spot from the reflective layer after passing through the cording  
10 layer, using the protrusions, to reproduce the data.